attend these meetings. In order to arrange for these speakers, he must of necessity confer with the heads of the several departments and have them delegate one or more of their assistants to do such work at specified times. It will be expected that the heads of departments will delegate such speakers unless it is absolutely impossible to do so on account of lack of help. If any given department is constantly unable to furnish teachers for extension work, either a lack of ability or a lack of desire upon the part of the department is indicated and the department should either have more assistance to strengthen it or it should be otherwise helped by executive action. Thus the superintendent of extension shall have a very strong moral influence delegated to him by the dean and director in persuading departments to do every reasonable amount of extension work, but he should not have any absolute authority to go into a department and disorganize it.

By this same token, the superintendent of extension should be an arm of the executive office and not a department head.

There should be no department of college extension in the same sense as there are other departments based upon natural division of labor. The function of extension is to extend the work of collective departments and not in itself to be a department. If it is allowed to be a department, it can only do so by either duplicating a part of the essential work of other departments or by usurping the same, and again it becomes a private and public nuisance.

There are colleges of agriculture in the United States, which if named would at once be recognized as in many respects the strongest in all the country in which the superintendent of college extension is virtually an assistant to the dean and not head of a coordinate department. Two of these greatest agricultural colleges which the writer has in mind have offices of college extension that are seldom talked about, but the colleges themselves are talked about and the work they do in their respective states is also talked about. The writer can think of other colleges where there are separate departments of college extension. The college-extension departments are very much talked about. The colleges they are supposed to represent are not so much talked about.

As time goes on the personnel of departments and their assistants and executives and all understand that they are servants of democracy. When that time, which is rapidly approaching, is completely here, no college or experiment station will rest content without putting its useful and usable information as rapidly as possible into the hands and hearts and heads of the people where it belongs. This latter work may be accomplished in the doing by an office of agricultural extension, but said office will not function like an extraneous department pasted on over other departments like a porous plaster.

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A new attachment for the Harvard kymographion

Certain methods have been used for studying the effect of fatigue on the muscle curve. Among these there is the old method of recording a make or break contraction; this method consists of removing the writing point from the drum and stimulating the muscle a certain number of times, say nine. The drum is revolved a few millimeters with the hand, then the writing point is replaced against the drum. This is repeated regularly at every tenth contraction until the muscle ceases to respond. This gives a series of straight lines on the drum formed by every tenth contraction of the muscle. The height of these lines gradually decreases as fatigue comes on until the zero point is reached; but it does not tell of the important changes occurring in the latent period and the period of relaxation.

This has been overcome on those particular types of European and American kymographions which have the supporting frame for the drum external. On these types of machines an insulated copper wire may be led

direct from the dry cell and wound around the rod or arm supporting the top of the drum, bent so that the short, bare, free end is directed downward. Now a second copper wire may be led from the opposite pole of the cell to the simple key and connections made from it with other wires via the inductorium to some basilar portion of the instrument. Next, a clean copper wire may be twisted or clamped to some part of the top of the revolving drum and properly adjusted in such a way that, if contact is just barely made with the first wire the circuit will be completed for an instant and the desired stimulus to the muscle will be given at certain definite intervals, always at exactly the same time on a uniform moving drum. In other words, the circuit is through the instrument and its action becomes automatic. In the case of the Harvard kymographion such an arrangement can not be used, for inasmuch as the drum is held by a spring to the sleeve which in turn fits over a tall vertical rod with its base resting on the friction plate there is no external support of the drum for attaching the wires.

Accordingly, in order to produce such automatic action on this particular type of machine, it is evident that some other device must be used. The one which has been worked out by the writer has been very successfully used at the laboratory of the University of Maryland during the past year. It consists of a thin metal disk of about 18 mm. diameter with a central opening large enough to admit the screw of the spin-screw and is held in place by means of the spin-nut against the head of the sleeve of the kymographion. To the outer under edge of this disk are soldered four copper wires of two thirds mm. diameter and about four cm. in length, which radiate out horizontally from the flat under surface of the disk and revolve with the drum. The circuit is then made complete by leading wires of two thirds mm. diameter; one series from the cell, first to the simple key and inductorium, then to the milled head, or some other basilar portion of the instrument; and the other to a tall iron-stand where the insulated wire may be wound around the upper portion of the upright rod, in order to hold it in place with about 6 or 7 cm. of the free end projecting laterally from it and vertical to the rod. Just enough of the insulation is removed from the far end of the wire to make a small eye about 3 mm. in length and 2 mm. in width, and bent so that the loop is directed downward. Into this is placed a wire pendulum made from the same kind of wire (uninsulated) having a similar sized eye at one end and being 5 to 6 mm. in length. When properly adjusted this wire arm projects out over the top of the drum of the kymographion, so that the wire pendulum just barely touches the outer extremities of the radiating arms as they come from the disk and revolve with the drum, thus making the electrical contact for just an instant, and thereby stimulating the muscle automatically.

It is of the utmost importance that the eye in the end of the wire and also the pendulum and ends of the radiating wires from the disk be kept clean and bright by means of emory paper, so that the electrical contact may always be at its highest point of efficiency. I might also mention the fact, that, if the pendulum is allowed to drag itself over the radiating arms by being too long, it will usually have a bouncing movement making several contacts and giving as many stimuli to the muscle.

It is also of advantage, although not absolutely necessary, to use a second simple key between the wire containing the pendulum and the cell, so that the circuit may be broken without stopping the instrument, or moving it away. However, one simple key in the circuit is usually sufficient.

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ACCURACY IN STATING THE OCCURRENCE OF SPECIES

TO THE EDITOR OF SCIENCE: The difficulties of exact scientific expression pointed out by Mr. J. D. Kusen[1] relate to the loose use of certain words in attempting to describe the

[1] SCIENCE, Vol. XXXV., June 14, 1912, pp. 930, 931.